

Special Issue on  
**Green and Robust CPS: Algorithms, Architecture, and Applications**

# CALL FOR PAPERS

The human history has witnessed three industrial revolutions. Nowadays, we are on the brink of the fourth industrial revolution, that is, Industry 4.0. The key methods that make traditional industrial operations smart and automatic lie in using Cyber-Physical Systems (CPS) such as smart grid, autonomous automobile systems, medical monitoring, process control systems, robotics systems, and automatic pilot avionics. CPS can monitor and create a virtual copy of the real-world industry processes, and thus we can know the status of each industry process, control the involved objects, and make proper decisions in a real-time manner. As a result, industrial production efficiency will be significantly improved, and cost, false rate, and waste will be significantly decreased.

Although CPS have the potential to bring revolution to the traditional industry operations, it is not easy to integrate CPS techniques into future Industry 4.0 due to the following two main challenges that we need to address. First, CPS are based on multiple sensory input/output devices, such as cameras, chips, and sensors, for logically interconnecting physical entities either to the Internet or to other physical entities. The lifetime of CPS is usually limited by these devices' battery volume. Hence, GREEN CPS algorithms, architecture, and applications deserve more attention. Second, perturbations are inevitable in real-world CPS, for example, noise in sensor measurements. We need to design a ROBUST CPS, in which slight perturbations cause only slight changes in the system execution. This special issue welcomes submissions on cross-disciplinary topics relevant to green and robust CPS. All relevant original research and review papers are encouraged.

Potential topics include but are not limited to the following:

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- ▶ Green (energy-saving perspective) concepts, principles, mechanisms, designs, algorithms, and research challenges for CPS
- ▶ Green characterizations, metrics, performance, measurement, testbeds, and results
- ▶ New system architectures and green computing model for CPS
- ▶ Robust algorithms, design, and implementation for CPS
- ▶ Caching, replication, and relaying methods for CPS-based edge networks
- ▶ Theoretical and experimental evaluation of CPS
- ▶ Testing and evaluation tools for CPS
- ▶ The future for CPS: challenges and open issues

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